

WHAT IS CLAIMED IS:

1. A method for stabilizing a solubilized phenyl phosphate comprising contacting the solubilized phenyl phosphate with a stabilizing amount of charcoal.
2. The method of claim 1, wherein the phenyl phosphate is paranitrophenyl phosphate.
3. The method of claim 2, wherein the solubilized paranitrophenyl phosphate is in an aqueous buffered solution having a pH of greater than approximately 9.0.
4. The method of claim 2, wherein the solubilized paranitrophenyl phosphate comprises \leq 3.0 g/L paranitrophenyl phosphate.
5. The method of claim 2, wherein the solubilized paranitrophenyl phosphate comprises approximately 1.0 to 3.0 g/L paranitrophenyl phosphate.
6. The method of claim 1, wherein the stabilizing amount of charcoal is an amount of approximately 5 to 15 mg/mL.
7. The method of claim 6, wherein the stabilizing amount of charcoal is an amount of approximately 10 mg/mL.
8. The method of claim 1, wherein the charcoal is activated charcoal.
9. The method of claim 2, further comprising removing substantially all of the charcoal from the solubilized paranitrophenyl phosphate.
10. A kit for phosphatase – phenyl phosphate reactions comprising a phosphatase and a stabilized solubilized phenyl phosphate.
11. The kit of claim 10, wherein the phenyl phosphate is paranitrophenyl phosphate.

12. The kit of claim 10, wherein the phosphatase is alkaline phosphatase or acid phosphatase.

13. A method for recycling a solubilized phenyl phosphate comprising admixing colored, solubilized phenyl phosphate with a recycling amount of charcoal.

14. The method of claim 13, wherein the phenyl phosphate is paranitrophenyl phosphate.

15. The method of claim 13, wherein the charcoal is activated charcoal.

16. The method of claim 14, wherein the solubilized paranitrophenyl phosphate is in an aqueous buffered solution having a pH of greater than approximately 9.0.

17. The method of claim 14, wherein the solubilized paranitrophenyl phosphate comprises \leq 3.0 g/L paranitrophenyl phosphate.

18. The method of claim 14, wherein the solubilized paranitrophenyl phosphate comprises approximately 1.0 to 3.0 g/L paranitrophenyl phosphate.

19. The method of claim 13, wherein the stabilizing amount of charcoal is an amount of approximately 5 to 15 mg/mL.

20. The method of claim 19, wherein the stabilizing amount of charcoal is an amount of approximately 10 mg/mL.

21. The method of claim 14, further comprising removing substantially all of the charcoal from the solubilized paranitrophenyl phosphate.

22. A stabilized, solubilized phenyl phosphate comprising a buffer, a phenyl phosphate, and a stabilizing amount of charcoal.

23. The stabilized, solubilized phenyl phosphate of claim 22, wherein the phenyl phosphate is paranitrophenyl phosphate.

24. The stabilized, solubilized phenyl phosphate of claim 23, wherein the charcoal is activated charcoal.

25. The stabilized, solubilized phenyl phosphate of claim 23, wherein the paranitrophenyl phosphate is in an amount of approximately 1.0 to 3.0 g/L.

26. The stabilized, solubilized phenyl phosphate of claim 22, wherein the phenyl phosphate is a Na^+ salt, a NH^{4+} salt, a Mg^{+2} salt or an isomer of a phenyl phosphate.

27. The stabilized, solubilized phenyl phosphate of claim 23, wherein the buffer is a basic buffer.

28. The stabilized, solubilized phenyl phosphate of claim 27, wherein the basic buffer is DEA, BIS-TRIS, TRIS, AMP, or AMPD.

29. The stabilized, solubilized phenyl phosphate of claim 22, further comprising a magnesium compound.

30. A ready-to-use enzyme substrate composition comprising phenyl phosphate, a buffer, and charcoal.

31. The ready-to-use enzyme substrate composition of claim 30, wherein the phenyl phosphate is paranitrophenyl phosphate.

32. The ready-to-use enzyme substrate composition of claim 30, wherein the charcoal is present in an amount of approximately 5 mg/mL to 15 mg/mL.

33. The ready-to-use enzyme substrate composition of claim 32, wherein the charcoal is present in an amount of approximately 10 mg/mL.

34. The ready-to-use enzyme substrate composition of claim 31, wherein the enzyme substrate is paranitrophenyl phosphate in an amount of approximately 1.0 g/L to 3.0 g/L.

35. The ready-to-use enzyme substrate composition of claim 34, wherein the paranitrophenyl phosphate is present in an amount of approximately 1.5 g/L.

36. A reagent kit for an enzyme activity assay comprising the ready-to-use enzyme substrate composition of claim 31 and an enzyme.

37. The reagent kit of claim 31, wherein the enzyme is alkaline phosphatase or acid phosphatase.

38. A method of preparing an aqueous liquid substrate system used in phosphatase enzyme determination comprising:

- (a) solubilizing a phenyl phosphate in an aqueous buffered solvent to provide a phenyl phosphate solution;
- (b) adding a magnesium compound to the phenyl phosphate solution;
- (c) contacting the solution with a stabilizing amount of charcoal; and
- (d) sealing the solution.

39. The method of claim 38, wherein the phenyl phosphate is paranitrophenyl phosphate.

40. The method of claim 38, further comprising removing substantially all of the charcoal from the solution prior to sealing the solution.

41. A vessel for containing a solubilized phenyl phosphate in a basic buffer, wherein the vessel comprises charcoal on the surface of the vessel exposed to the solubilized phenyl phosphate.

42. The vessel of claim 41, wherein the phenyl phosphate is paranitrophenyl phosphate.

43. A kit for recycling a solubilized phenyl phosphate having an absorbance over 0.1 OD due to non-enzymatic hydrolysis when measured at 400 to 410 nm comprising a stabilizing amount of charcoal.

44. The kit of claim 43, wherein the phenyl phosphate is paranitrophenyl phosphate.

45. The kit of claim 43, wherein the stabilizing amount of charcoal is in an amount of about 10 mg/mL +/-5 mg/mL.

46. The kit of claim 44, wherein the charcoal is in self-contained units of about 100 mg charcoal per self-contained unit, and wherein the self-contained units are to be added to the solubilized phenyl phosphate in need of recycling in an amount sufficient to provide about 10 +/-5 mg charcoal/mL solubilized phenyl phosphate.

47. The kit of claim 46, wherein the self-contained unit of charcoal is in the form of a pellet, a tablet, a tablet in a blister pack, or a perforated capsule.